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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,758	08/18/2003	Kitrick Sheets	1376.729US1	3924
21186	7590	08/30/2005	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A. P.O. BOX 2938 MINNEAPOLIS, MN 55402-0938			TSAI, SHENG JEN	
			ART UNIT	PAPER NUMBER
			2186	

DATE MAILED: 08/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/643,758

Applicant(s)

SHEETS ET AL.

Examiner

Sheng-Jen Tsai

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### **DETAILED ACTION**

1. Claims 1-11 are presented for examination in this application (10,643,758)-filed on August 18, 2003.

#### ***Duty To Disclose Information Material To Patentability***

2. The following is a quotation of the appropriate paragraphs of 37 C.F.R. 1.56 that recites Applicants' duty to disclose information material to patentability:

"Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct."

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Scott (US Patent Application Publication 2004/0044872).

As to claim 1, Scott discloses **a method of accessing shared memory in a computer system having a plurality of nodes [figure 1], including a first node [any node in figure 1 may be the first node], wherein each node includes a processor and local memory [figure 1], the method comprising:**

**distributing an application across the plurality of nodes [paragraph 0003];**

**building an application virtual address space [a node's TLB will need to contain address translation for all the memory that node is able to access, which is the virtual address space of the node (paragraph 0003)], wherein building an application virtual address space includes:**

**building a local virtual address space for the application in each of the plurality of nodes, wherein the local virtual address space translates a virtual address generated by the application executing on that node to a physical address in local memory for that node [a node's TLB will need to contain address translation for**

all the memory that node is able to access, which is the virtual address space of the node (paragraphs 0003-0006)); and  
**exporting the local virtual address space for each node to a Remote Translation Table (RTT) associated with that node** [figure 5 shows the RTT table; figure 6A~6D];  
and  
**performing a memory reference to a memory location in the application virtual address space, wherein performing a memory reference to a memory location in the application virtual address space includes translating bits of the application virtual address into a node address associated with the first node and translating bits of the application virtual address using the RTT associated with the first node** [figure 4; figures 2A, 2B and 3; paragraphs 0019-0020].

As to claim 2, Scott teaches that **the local address space is read from a Translation Look-aside Buffer (TLB)** [figure 4, step 406; paragraphs 0019-0020].

As to claim 3, In order for the remote translation mechanism disclosed by Scott to work and function properly, it is inherent that the RTT at all the nodes be initialized and synchronized first before any reference to a memory location resides at a remote node can be served. Without the initialization and synchronization, the RTT may not have the correct information to reach the correct memory location.

As to claim 4, Scott teaches **a system comprising:**  
**a plurality of nodes** [figure 1], **each node including:**  
**one or more processors** [figure 1];  
**a memory** [figure 1]; and

**a memory controller operatively coupled to the memory and the one or more processors** [figure 5 shows the memory control mechanism], **wherein the memory controller includes a Remote Translation Table (RTT)** [figure 5 shows the RTT table; figure 6A~6D], **wherein the RTT translates a virtual address received as part of a memory request received from another node into a memory request with physical addresses into the memory on the node associated with the RTT** [paragraph 0005];

**further wherein the RTT is initialized upon the start of a process associated with an application by building virtual to physical address translations for local virtual address space in the node corresponding to the application** [In order for the remote translation mechanism disclosed by Scott to work and function properly, it is inherent that the RTT at all the nodes be initialized and synchronized first before any reference to a memory location resides at a remote node can be served. Without the initialization and synchronization, the RTT may not have the correct information to reach the correct memory location], **and exporting the virtual to physical address translations for the local virtual address space from the node to the Remote Translation Table (RTT) associated with that node** [figure 5 shows the RTT table; figure 6A~6D; paragraphs 0019-0020, 0030].

As to claim 5, In order for the remote translation mechanism disclosed by Scott to work and function properly, it is inherent that the RTT at all the nodes be initialized and synchronized first before any reference to a memory location resides at a remote node

can be served. Without the initialization and synchronization, the RTT may not have the correct information to reach the correct memory location.

As to claim 6, refer to "As to claim 1."

As to claim 7, refer to "As to claim 3."

As to claim 8, refer to "As to claim 2."

As to claim 9, refer to "As to claim 1" and "As to claim 4."

As to claim 10, refer to "As to claim 3."

As to claim 11, refer to "As to claim 1" and "As to claim 4." Further, figure 5 shows a network as part of the system.

**5. Related Prior Art**

The following list of prior art is considered to be pertinent to applicant's invention, but not relied upon for claim analysis conducted above.

- Scott et al. (US 6,925,547), "Remote Address Translation in a Multiprocessor System."
- Schimmel, (US 6,105,113), "System and Method for Maintaining Translation Look-Aside Buffer (TLB) Consistency."

**Conclusion**

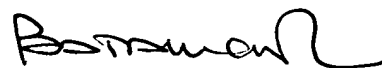
6. Claims 1-11 are rejected as explained above.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sheng-Jen Tsai whose telephone number is 571-272-4244. The examiner can normally be reached on 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sheng-Jen Tsai  
Examiner  
Art Unit 2186

August 23, 2005



**PIERRE BATAILLE**  
**PRIMARY EXAMINER**

8/25/05